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Transmitted herewith for filing under 37 CFR 1.53(b) is the

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Inventor(s)/Applicant Identifier: Jamey Graham

For: METHOD AND SYSTEM FOR CREATING A DOCUMENT INTEREST PROFILE

Enclosed are:

[X] 13 pages of specification
[X] 1 page of Title Page
[X] 7 pages of claims
[X] 1 page of Abstract
[X] 10 sheets formal drawings
[X] Letter to Official Draftsperson
[X] A signed Declaration & Power of Attorney
[X] An Assignment
[X] Recordation Cover Sheet
[X] Information Disclosure Statement under 37 CFR 1.97, Form PTO-1449, and five references

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INDEP. CLAIMS	6 - 3	= *3	x $39.00 =		OR	x $78.00 =	$234.00
[ ] MULTIPLE DEPENDENT CLAIM PRESENTED			+ $130.00 =		OR	+ $260.00 =	
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PATENT APPLICATION

METHOD AND SYSTEM FOR CREATING A DOCUMENT INTEREST PROFILE

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METHOD AND SYSTEM FOR CREATING A DOCUMENT INTEREST PROFILE

CROSS-REFERENCES TO RELATED APPLICATIONS

This application incorporates by reference the following commonly owned co-pending U.S. Patent Application in its entirety for all purposes:

U.S. Patent Application Serial No. 08/995,616, Entitled , "AUTOMATIC ADAPTIVE DOCUMENT HELP SYSTEM." (attorney docket no. 15358-004200US / ID-CRC-176).

BACKGROUND OF THE INVENTION

The present invention relates to electronic documents and more particularly to method and system for providing interest profiles for electronic documents with features to enhance the experience of reading or using the electronic document.

Increasingly, readers of documents are being called upon to assimilate vast quantities of information in a short period of time. To meet the demands placed upon them, readers find they must read documents "horizontally," rather than "vertically," i.e., they must scan, skim, and browse sections of interest in multiple documents rather than read and analyze a single document from beginning to end.

Documents are becoming more widely available in electronic form. Some documents are available electronically by virtue of their having been created using word processing software. Other electronic documents are accessible via the Internet. Yet others may become available in electronic form by virtue of being scanned in, copied, or faxed. Commonly assigned U.S. Application No. 08/754,721, entitled AUTOMATIC AND TRANSPARENT DOCUMENT ARCHIVING, the contents of which are incorporated herein by reference for all purposes, details a system for generating electronic as well as hardcopy format of documents.

However, the mere availability of documents in electronic form does not assist the reader in confronting the challenges of assimilating information quickly.

Certain tools take advantage of the electronic form documents to assist harried readers. Tools exist to search for documents both on the Internet and locally. Once a document is identified and retrieved, automatic summarization techniques, such as the Reader's Helper™, described in a commonly owned copending U.S. Patent Application No. 08/995,616, entitled AUTOMATIC ADAPTIVE DOCUMENT HELP SYSTEM, the contents of which are incorporated herein by reference for all purposes, helps the reader to find as well as assimilate the information he or she wants more quickly.

What is needed is a document interest profiling method that helps the reader find the information he or she wants more quickly. The document interest profiling method should be easily personalized, flexible and adaptive as well.

SUMMARY OF THE INVENTION

According to one embodiment of the present invention, methods and systems for displaying an interest profile for an electronically stored document are provided. Interest profiles provide features that can enhance the experience of reading or using the electronic document. In exemplary embodiments, methods and systems include one or more interest profile techniques, such as graphical presentations and the like, for browsing or searching documents are provided. The graphical presentation can provide information about content of a document. The invention can be embodied in computer systems that include user input devices, processors, displays, storage and the like.

In an exemplary embodiment, a method for providing an interest profile includes a variety of steps. A step of accepting from a user input indicating the user's specified concepts of interest can be part of the method. The method can also include analyzing an electronically stored document to identify locations of discussion of the user-specified concept of interest. Techniques for determining locations of concepts of interest can be used with the method, such as keyword counting, Bayesian analysis techniques described in a commonly owned copending U.S. Patent Application No. 08/995,616, entitled AUTOMATIC ADAPTIVE DOCUMENT HELP SYSTEM, and the like, in various embodiments of the present invention. The method also displays an indication of presence of discussion about the concepts of interest within the

electronically stored document. The indication can provide to a reader approximate positions of portions of the document relevant to the concept of interest.

In some embodiments, the indication can be a graphical representation of the presence of one or more concepts of interest to the reader. The graph can also indicate a persistence of the concept at various locations within the document by showing a relative amount of discussion of the concepts at various locations within the document. Embodiments can provide graphical presentations including contours, bar charts, scatter plots, and the like.

In another aspect according to the present invention, a method for providing an interest profile for an electronically stored document comprises a number of steps, such as accepting user input indicating user-specified concepts of interest and analyzing the electronically stored document to identify locations of discussion of the user-specified concepts of interest. The method can include displaying one or more selectable concept indicators corresponding to particular concepts of interest and accepting user input selecting at least one of these concept indicators. The method can also include displaying an indication of presence of discussion about one or more of the concepts of interest within the electronically stored document. The indication of presence can comprise a contour graph image corresponding to the electronically stored document that indicates a relative presence of discussions of at least one of the concepts of interest based upon the selections made by the user.

Some embodiments can also include displaying a second indication of presence of the concepts of interest comprising an elongated thumbnail image of all or a portion of electronically stored document in another viewing area of the display. The thumbnail image can have one or more indications of locations of discussion of concepts of interest based upon the concept or concepts selected by the user. Further, some embodiments will display the second indication juxtaposed to the first indication, enabling the user to visually compare the two indications.

In another aspect according to the present invention, a computer program product for providing an interest profile for an electronically stored document comprises a computer readable storage medium containing code for performing a variety of tasks. The product can comprise code for accepting user input indicating user-specified concepts of interest and code for analyzing the electronically stored document to identify locations of discussion of user-specified concepts of interest. The program product can

also include code for displaying an indication of presence of discussion about concepts of interest within the electronically stored document. The indication can provide a reader an approximate position of discussion within the electronically stored document.

In another aspect according to the present invention, a system for providing an interest profile for an electronically stored document can include a memory, a display and a processor interconnected to the memory and the display by a bus. The processor can perform tasks such as accepting user input indicating user-specified concepts of interest and analyzing the electronically stored document to identify locations of discussion of the user-specified concept of interest. The processor can also display an indication of presence of discussion about the concepts of interest within the electronically stored document on the display. The indication can provide a reader an approximate position of the discussion within the electronically stored document.

Numerous benefits are achieved by way of the present invention over conventional techniques. The present invention can provide an interest profile of a document for the reader. In many embodiments, the interest profile can be easily personalized to the user. Some embodiments are easier to use than conventional browser user interfaces. Embodiments according to the invention can provide more information to the reader of a document than known techniques. Many embodiments according to the invention will enhance the user's reading or web browsing experience by providing indication of which portions of documents are likely to be of most interest to the reader. These and other benefits are described throughout the present specification.

A further understanding of the nature and advantages of the inventions herein may be realized by reference to the remaining portions of the specification and the attached drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Figs. 1A-1B illustrate document interest profiles in particular embodiments according to the present invention;

Fig. 2 is an illustration of a system in a particular embodiment according to the present invention;

Fig. 3 is an illustration of basic subsystems of the system of Fig. 2;

Fig. 4 illustrates a representative screen display in a particular embodiment according to the present invention;

Fig. 5 illustrates a representative screen display in an alternative embodiment according to the present invention;

Figs. 6A-6B illustrate simplified flowcharts of representative process steps in particular embodiments according to the present invention; and

Figs. 7A-7D illustrate a representative example of browsing documents in a particular embodiment according to the present invention.

DESCRIPTION OF THE SPECIFIC EMBODIMENTS

The present invention provides interest profiles for electronic documents to enhance the experience of reading or using the document. In exemplary embodiments, methods and systems including a graphical presentation of an interest profile assist the user in browsing or searching documents. The graphical presentation can provide information about content of a document, for example. The invention can be embodied in computer systems that include user input devices, processors, displays, storage and the like.

Fig. 1A is an illustration of a representative document interest profile image in a particular embodiment according to the present invention. This diagram is merely an example which should not limit the scope of the claims herein. One of ordinary skill in the art would recognize many other variations, alternatives, and modifications. Fig. 1A illustrates an annotation contour graphical presentation 101 of a document interest profile. Annotation contour 101 presents a profile view of a document based on a persistence measure of a concept within the document. A persistence measure can be a number of annotations ("hits") in the document, for example. Reference may be had to a commonly owned, co-pending U.S. Patent Application Serial No. 08/995,616, entitled, "AUTOMATIC ADAPTIVE DOCUMENT HELP SYSTEM," incorporated herein by reference in its entirety for all purposes, for a detailed explanation of analyzing a document's content.

Annotation contour 101 can show the concentration, or persistence, of annotations throughout an entire document, or in portions of the document. Annotation contours can assist users viewing long documents. While annotation contour 101 comprises a line graph format, those of ordinary skill in the art can readily appreciate that other presentation formats, such as bar charts, scatter plots and the like can also be used

without departing from the scope of the present invention. Annotation contour 101 comprises a page pointer 102 that can be dragged to a location on a graphical representation of the document contents 104 by the user using a pointing device, such as a mouse, for example. Responsive to the user's positioning the page pointer to a position in the graphical document representation, the display screen will reposition to display a corresponding location within the document. In this manner, the user can evaluate where the concentration of a concept of interest is within the document and move to this position within the document by sliding the page pointer to a corresponding location on the graphical representation of the document. In a presently preferable embodiment, the distance between the vertical lines of page pointer 102 is approximately 1 page length. However, other lengths can be used without departing from the scope of the present invention.

Fig. 1B is an illustration of another representative document interest profile image in a particular embodiment according to the present invention. This diagram is merely an example which should not limit the scope of the claims herein. One of ordinary skill in the art would recognize many other variations, alternatives, and modifications. Fig. 1B illustrates an annotation contour graphical presentation 103 of a document interest profile. Annotation contour 103 presents a profile view of a document based on a persistence measure of two concepts within the document. Annotation contour 103 comprises a graphical representation 106 corresponding to the persistence of a first concept of interest within the subject document, and a graphical representation 108 corresponding to the persistence of a second concept of interest within the subject document. While annotation contour 103 has been discussed with two concepts of interest, those of ordinary skill in the art can readily appreciate that the method is easily extendible to any number of concepts of interest without departing from the scope of the present invention.

In an alternative embodiment, a single contour can be used to indicate presence or persistence of multiple concepts of interest. In such an embodiment, the contour can display a result of a manipulation of constituent presence or persistence measurements. For example, information about the presence or persistence of two concepts of interest can be added, and a contour can be displayed showing the result of the addition. Other manipulations, such as subtraction of one interest profile from

another, scaling by a scalar or functional factor, and the like are embodiments within the scope of the present invention.

Fig. 2 is an illustration of a representative system suitable for implementing the according to a particular embodiment of the present invention. This diagram is merely an example which should not limit the scope of the claims herein. One of ordinary skill in the art would recognize many other variations, alternatives, and modifications. Fig. 2 depicts but one example of many possible computer types or configurations capable of being used with the present invention. Embodiments according to the invention can be implemented in a single application program such as a browser, or may be implemented as multiple programs in a distributed computing environment, such as a workstation, personal computer or a remote terminal in a client server relationship. Fig. 2 shows computer system 210 including display device 220, display screen 230, cabinet 240, keyboard 250, scanner 260 and mouse 270. Mouse 270 and keyboard 250 are representative "user input devices." Other examples of user input devices are a touch screen, light pen, track ball, data glove and so forth. Fig. 2 is representative of but one type of system for embodying the present invention. It will be readily apparent to one of ordinary skill in the art that many system types and configurations are suitable for use in conjunction with the present invention.

In a preferred embodiment, computer system 210 includes a Pentium® class based computer, running Windows® NT operating system by Microsoft Corporation. However, the method is easily adapted to other operating systems and architectures without departing from the scope of the present invention.

Mouse 270 may have one or more buttons such as buttons 280. Cabinet 240 houses familiar computer components such as disk drives, a processor, storage means, etc. As used in this specification "storage means" includes any storage device used in connection with a computer system such as disk drives, magnetic tape, solid state memory, bubble memory, etc. Cabinet 240 may include additional hardware such as input/output (I/O) interface cards for connecting computer system 210 to external devices such as a scanner 260, external storage, other computers or additional peripherals.

Fig. 3 is an illustration of basic subsystems in computer system 210 of Fig. 2. In Fig. 3, subsystems are represented by blocks such as central processor 300, system memory 310, etc. This diagram is merely an example which should not limit the scope of

the claims herein. One of ordinary skill in the art would recognize many other variations, alternatives, and modifications. The subsystems are interconnected via a system bus 320. Additional subsystems such as a printer, keyboard, fixed disk and others are shown. Peripherals and input/output (I/O) devices can be connected to the computer system by any number of means known in the art, such as serial port 330. For example, serial port 330 can be used to connect the computer system to a modem, a mouse input device, or a scanner. The interconnection via system bus 320 allows central processor 300 to communicate with each subsystem and to control the execution of instructions from system memory 310 or the fixed disk, as well as the exchange of information between subsystems. Other arrangements of subsystems and interconnections are readily achievable by those of ordinary skill in the art. System Memory 310, and the fixed disk are examples of tangible media for storage of computer programs, other types of tangible media include floppy disks, removable hard disks, optical storage media such as CD-ROMS and bar codes, and semiconductor memories such as flash memory, read-only-memories (ROM), and battery backed memory.

Fig. 4 illustrates a representative browser user interface 401 having a document interest profile display 402 which can be displayed on display screen 230 of Fig. 2, in a particular embodiment according to the present invention. This diagram is merely an example which should not limit the scope of the claims herein. One of ordinary skill in the art would recognize many other variations, alternatives, and modifications. Fig. 4 illustrates an example use of an annotation contour 402 in conjunction with a find command box 404 for searching through the current document of interest, such as a page from the world wide web, for example, for information about one or more concepts of interest. As shown in Fig. 4, a user has entered a topic, "paper" in a field within the find command box 404. By clicking on the "find next" button, the user can move through the document from one instance of the word "paper" to the next. Additionally, annotation contour 402 indicates a persistence of the term "paper" within the document. A page pointer 406 at the top of annotation contour 402, can provide an indication of the relative position of the current page displayed to the user in the display window.

Fig. 5 illustrates another representative browser user interface having a document interest profile display 502 which can be displayed on display screen 230 of Fig. 2, in a particular embodiment according to the present invention. This diagram is

merely an example which should not limit the scope of the claims herein. One of ordinary skill in the art would recognize many other variations, alternatives, and modifications. Fig. 5 illustrates a user interface 501 for viewing an annotated document online. Annotations can be added to a document in a variety of ways, such as described in a commonly owned copending U.S. Patent Application No. 08/995,616, entitled AUTOMATIC ADAPTIVE DOCUMENT HELP SYSTEM, which is incorporated herein by reference in its entirety for all purposes. A first viewing area 502 in user interface 501 shows a section of an electronic document. Using a scroll bar 504, or in other ways, the user may scroll the displayed section through the electronic document.

Some embodiments can include a series of concept indicators 506 that permit the user to identify which concepts of interest are to be noted in the document. A sensitivity control 508 permits the user to select the degree of sensitivity to apply in identifying potential locations of relevant discussion. At low sensitivity, more locations will be denoted as being relevant, even though some may not be of any actual interest. At high sensitivity, most all denoted locations will in fact be relevant but some other relevant locations may be missed. Many embodiments provide a percentage giving the relevance of the currently viewed document to the concept for each concept name appearing by one of selectable concept indicators 506. These relevance levels offer a quick assessment of the relevance of the document to the selected concepts.

In many embodiments, an elongated thumbnail image 514 representing the contents of the document is provided in a second viewing area 515. Thumbnail image 514 depicts a representation of the contents of the document, the current location of the reader, i.e., the location of the text displayed in section 502, using a sliding window 522, as well as annotations corresponding to locations of discussion of concepts of interest to the reader, such as annotation 530a that corresponds to annotation 530b in the document displayed in viewing area 502. An annotation contour 520 can be displayed along with elongated thumbnail image 514. Annotation contour 520 can provide an indication of the presence of one or more concepts of interest to the reader within the document. A second sliding window 524 provides a counter part to sliding window 522. Counterpart sliding window 524 can be positioned along the annotation contour 520, to enable the user to find discussions of the topics of interest within the document.

In some embodiments, one or more navigation tools can be found on a navigation toolbar 516. Miscellaneous annotation tools can be found on an annotation

toolbar 518. The annotation tools on annotation toolbar 518 facilitate navigation through a collection of documents. Annotations may be added to the document text to denote relevance to user-selected concepts of interest.

Fig. 6A illustrates a flowchart 601 of simplified process steps in a particular representative embodiment according to the invention for creating a document interest profile. This diagram is merely an example which should not limit the scope of the claims herein. One of ordinary skill in the art would recognize many other variations, alternatives, and modifications. The method is preferably embodied as software processes executing in a computer system that includes a user input device coupled to a processor, a display and a memory. In a step 602, user input indicating user-specified concepts of interest is accepted. Next, in a step 604, the electronic document is analyzed in order to identify locations of discussion of the concepts of interest to the user specified in step 602. Then, in a step 606, the electronic document is displayed, with an indication to the reader of the presence of the concepts of interest within the document. The indication can take the form of a contour graph that indicates the relative strength of the concept of interest at various points within the document. In some embodiments, a pointer associated with the graph can provide an indication to a reader of an approximate position of a currently displayed portion of the document, using a 'sliding window' style indication.

Fig. 6B illustrates a flowchart 603 of simplified process steps in another representative embodiment according to the invention for creating a document interest profile. This diagram is merely an example which should not limit the scope of the claims herein. One of ordinary skill in the art would recognize many other variations, alternatives, and modifications. Fig. 6B illustrates a step 612, wherein user input indicating user-specified concepts of interest is accepted. Next, in a step 614, the electronic document is analyzed in order to identify locations of discussion of the concepts of interest to the user specified in step 612. In a step 615, input from the user selecting one or more concepts of interest is accepted. Input can be received from the user clicking on icons with the mouse, or the like. Then, in a step 616, the electronic document is displayed, with an indication to the reader of the presence of the concepts of interest selected by the user in step 615. The indication can take the form of a contour graph that indicates the relative strength of the concept of interest at various points within the document. In some embodiments, a pointer associated with the graph can provide an

indication to a reader of an approximate position of a currently displayed portion of the document, using a 'sliding window' style indication.

Some embodiments will also include a document thumbnail image to provide summary information, and the like.

Figs. 7A-7D illustrate representative screens in examples of particular embodiments according to the present invention. In the examples of Figs. 7A-7D, a user is using an exemplary embodiment to learn about wearable computers. Other references about these topics, as well as other topics can be viewed using various embodiments according to the present invention. Thus, the screens of Figs. 7A-7D are intended to exemplary and not limiting.

Fig. 7A illustrates a representative screen in an example search or browsing of a web based document in a particular embodiment according to the present invention. This diagram is merely an example which should not limit the scope of the claims herein. One of ordinary skill in the art would recognize many other variations, alternatives, and modifications. Fig. 7A illustrates a browser user interface 701 for viewing an annotated document online. A first viewing area 702 in user interface 701 shows a section of an electronic document. A scroll bar 704 provides the user with the ability to scroll the displayed section through the electronic document. A plurality of selectable concept indicators 706 permit the user to identify which concepts of interest are to be noted in the document. A percentage gives the relevance of the currently viewed document to the concept for each concept name appearing by one of selectable concept indicators 706. These relevance levels offer a quick assessment of the relevance of the document to the selected concepts. An annotation 708 indicates the presence of the word "wearable" within the body of the document. "Wearable" is a concept of interest denoted by concept of interest indicator 710.

Annotation contour 712 provides an "activity indication" of the locations of the annotations, such as annotation 708, within the document. The graph of annotation contour 712 indicates a relative number of annotations throughout the document. Other types of indicators, such as bar graphs, scatter plots and the like can also be used to provide information about the location and number of annotations within the document in other embodiments according to the present invention. Page pointer 714 indicates the relative position of the currently displayed page of viewing area 702 within the document. The user can move page pointer 714 along annotation contour 712 in order to position the

document in the first viewing area 702 to a portion of the document having a high concentration of instances of annotations.

Fig. 7B illustrates another representative screen in the example search or browsing of a web based document in a particular embodiment according to the present invention. This diagram is merely an example which should not limit the scope of the claims herein. One of ordinary skill in the art would recognize many other variations, alternatives and modifications. Fig. 7B illustrates browser 701 wherein a user has repositioned page pointer 714 to a portion of the document having relatively many instances of annotations for a particular concept. Display viewing area 702 now depicts a portion of the document corresponding to the placement of the page pointer by the user. In this way, the user can quickly locate portions of a large document having material about concepts of interest to the user by sliding the page pointer to an apparent "hot spot" within the document.

Fig. 7C illustrates a further representative screen in an example search or browsing of a web based document in a particular embodiment according to the present invention. This diagram is merely an example, which should not limit the scope of the claims herein. One of ordinary skill in the art would recognize many other variations, alternatives and modifications. Fig. 7C illustrates browser 701 wherein the user has selected an individual concept, "wearable" as being of interest. The user selects a concept indicator 706a corresponding to the concept "wearable" from among the selectable concept of interest indicators 706. Annotation contour 712 depicts the relative occurrence of the selected concept, "wearable" within the document.

Fig. 7D illustrates a yet further representative screen in an example search or browsing of a web based document in a particular embodiment according to the present invention. This diagram is merely an example, which should not limit the scope of the claims herein. One of ordinary skill in the art would recognize many other variations, alternatives and modifications. Fig. 7D illustrates browser 701 wherein the user has selected two concepts, "wearable," and "design" as being of interest. The user selects a concept indicator 706a corresponding to the concept "wearable," and a concept indicator 706b corresponding to the concept "design" from among the selectable concept of interest indicators 706. Annotation contour 712 depicts the relative occurrence of the selected concept, "wearable" within the document.

In conclusion, the present invention provides for a method of providing an interest profile for documents. In the foregoing specification, the invention has been described with reference to a specific exemplary embodiments thereof. Many changes or modifications are readily envisioned. For example, changing the size or arrangement of the document interest profile image in the display, changing the appearance and features of document interest profile image by using different graphing methods and other types of depictions; adding audio effects; adding audio memos describing the contents of the document, among other changes, are included within other embodiments of the present invention.

The specification and drawings are, accordingly, to be regarded in an illustrative rather than in a restrictive sense. It will, however, be evident that various modifications and changes may be made thereunto without departing from the broader spirit and scope of the invention as set forth in the claims.

WHAT IS CLAIMED IS:

1. A method for providing an interest profile for an electronically stored document, said method comprising:

accepting user input indicating user-specified concepts of interest;

analyzing said electronically stored document to identify locations of discussion of said user-specified concept of interest; and

displaying an indication of presence of discussion about said concepts of interest within said electronically stored document, wherein said indication provides to a reader an approximate position of said discussion within said electronically stored document.

2. The method of claim 1 wherein said displaying said indication of presence further comprises:

displaying a contour graph image corresponding to said electronically stored document in a viewing area of a display, said contour graph image depicting a relative presence of at discussions of at least one of a plurality of concepts of interest to said user.

3. The method of claim 2 wherein said graph further comprises a line graph.

4. The method of claim 2 wherein said graph further comprises a bar graph.

5. The method of claim 2 wherein said graph further comprises a scatter diagram.

6. The method of claim 1 wherein said indication further provides an indication of a persistence of said discussion within said electronically stored document.

7. The method of claim 1 further comprising:

accepting user input controlling a sliding pointer through said contour image for the purposes of indicating sections of said electronically stored document to display.

8. The method of claim 2 further comprising:

displaying a second indication of presence of said concepts of interest, said second indication comprising an elongated thumbnail image of a portion of said electronically stored document in a viewing area of a display, said thumbnail image having at least one of a plurality of indications of locations of discussion of concepts of interest to said user.

9. The method of claim 1 further comprising:

displaying a plurality of selectable concept indicators, said selectable concept indicators corresponding to concepts of interest;

accepting user input selecting at least one of said plurality of concept indicators; and

displaying said indication of presence of discussion about said concept of interest within said electronically stored document based upon the concept selected by the user.

10. A method for providing an interest profile for an electronically stored document, said method comprising:

accepting user input indicating user-specified concepts of interest;

analyzing said electronically stored document to identify locations of discussion of said user-specified concept of interest;

displaying a plurality of selectable concept indicators, said selectable concept indicators corresponding to concepts of interest;

accepting user input selecting at least one of said plurality of concept indicators;

displaying an indication of presence of discussion about said concepts of interest within said electronically stored document, wherein said indication of presence comprises a contour graph image corresponding to said electronically stored document, said contour graph image depicting a relative presence of discussions of at least one of a plurality of concepts of interest based upon the concept selected by the user; and

displaying a second indication of presence of said concepts of interest, said second indication comprising an elongated thumbnail image of a portion of said electronically stored document in a viewing area of a display, said thumbnail image

having at least one of a plurality of indications of locations of discussion of concepts of interest based upon the concept selected by the user.

11. A computer program product for providing an interest profile for an electronically stored document, said computer program product comprising:

code for accepting user input indicating user-specified concepts of interest;

code for analyzing said electronically stored document to identify locations of discussion of said user-specified concept of interest;

code for displaying an indication of presence of discussion about said concepts of interest within said electronically stored document, wherein said indication provides to a reader an approximate position of said discussion within said electronically stored document; and

a computer readable storage medium for holding the codes.

12. The computer program product of claim 11 wherein said code for displaying said indication of presence further comprises:

code for displaying a contour graph image corresponding to said electronically stored document in a viewing area of a display, said contour graph image depicting a relative presence of at discussions of at least one of a plurality of concepts of interest to said user.

13. The computer program product of claim 12 wherein said graph further comprises a line graph.

14. The computer program product of claim 12 wherein said graph further comprises a bar graph.

15. The computer program product of claim 12 wherein said graph further comprises a scatter diagram.

16. The computer program product of claim 11 wherein said indication further provides an indication of a persistence of said discussion within said electronically stored document.

17. The computer program product of claim 11 further comprising:

code for accepting user input controlling a sliding pointer through said contour image for the purposes of indicating sections of said electronically stored document to display.

18. The computer program product of claim 12 further comprising:

code for displaying a second indication of presence of said concepts of interest, said second indication comprising an elongated thumbnail image of a portion of said electronically stored document in a viewing area of a display, said thumbnail image having at least one of a plurality of indications of locations of discussion of concepts of interest to said user.

19. The computer program product of claim 11 further comprising:

code for displaying a plurality of selectable concept indicators, said selectable concept indicators corresponding to concepts of interest;

code for accepting user input selecting at least one of said plurality of concept indicators; and

code for displaying said indication of presence of discussion about said concept of interest within said electronically stored document based upon the concept selected by the user.

20. A computer program product for providing an interest profile for an electronically stored document, said computer program product comprising:

code for accepting user input indicating user-specified concepts of interest;

code for analyzing said electronically stored document to identify locations of discussion of said user-specified concept of interest;

code for displaying a plurality of selectable concept indicators, said selectable concept indicators corresponding to concepts of interest;

code for accepting user input selecting at least one of said plurality of concept indicators;

code for displaying an indication of presence of discussion about said concepts of interest within said electronically stored document, wherein said indication of presence comprises a contour graph image corresponding to said electronically stored document, said contour graph image depicting a relative presence of discussions of at least one of a plurality of concepts of interest based upon the concept selected by the user;

code for displaying a second indication of presence of said concepts of interest, said second indication comprising an elongated thumbnail image of a portion of said electronically stored document in a viewing area of a display, said thumbnail image having at least one of a plurality of indications of locations of discussion of concepts of interest based upon the concept selected by the user; and

a computer readable storage medium for containing the codes.

21. A system for providing an interest profile for an electronically stored document, said system comprising:

a memory;

a display;

a processor, interconnected to said memory and said display by a bus, said processor operatively disposed to:

accept user input indicating user-specified concepts of interest;

analyze said electronically stored document to identify locations of discussion of said user-specified concept of interest; and

display an indication of presence of discussion about said concepts of interest within said electronically stored document on said display, wherein said indication provides to a reader an approximate position of said discussion within said electronically stored document.

22. The system of claim 21 wherein said displaying said indication of presence further comprises:

displaying a contour graph image corresponding to said electronically stored document in a viewing area of a display, said contour graph image depicting a relative presence of at discussions of at least one of a plurality of concepts of interest to said user.

23. The system of claim 22 wherein said graph further comprises a line graph.

24. The system of claim 22 wherein said graph further comprises a bar graph.

25. The system of claim 22 wherein said graph further comprises a scatter diagram.

26. The system of claim 21 wherein said indication further provides an indication of a persistence of said discussion within said electronically stored document.

27. The system of claim 21, wherein said processor is further operative to:

accept user input controlling a sliding pointer through said contour image for the purposes of indicating sections of said electronically stored document to display.

28. The system of claim 22, wherein said processor is further operative to:

display a second indication of presence of said concepts of interest, said second indication comprising an elongated thumbnail image of a portion of said electronically stored document in a viewing area of a display, said thumbnail image having at least one of a plurality of indications of locations of discussion of concepts of interest to said user.

29. The system of claim 21, wherein said processor is further operative to:

display a plurality of selectable concept indicators, said selectable concept indicators corresponding to concepts of interest;

accept user input selecting at least one of said plurality of concept indicators; and

display said indication of presence of discussion about said concept of interest within said electronically stored document based upon the concept selected by the user.

30. A system for providing an interest profile for an electronically stored document, said system comprising:

a memory;

a display;

a processor, interconnected to said memory and said display by a bus, said processor operatively disposed to:

accept user input indicating user-specified concepts of interest;

analyze said electronically stored document to identify locations of discussion of said user-specified concept of interest;

display a plurality of selectable concept indicators, said selectable concept indicators corresponding to concepts of interest;

accept user input selecting at least one of said plurality of concept indicators;

display an indication of presence of discussion about said concepts of interest within said electronically stored document, wherein said indication of presence comprises a contour graph image corresponding to said electronically stored document, said contour graph image depicting a relative presence of discussions of at least one of a plurality of concepts of interest based upon the concept selected by the user; and

display a second indication of presence of said concepts of interest, said second indication comprising an elongated thumbnail image of a portion of said electronically stored document in a viewing area of a display, said thumbnail image having at least one of a plurality of indications of locations of discussion of concepts of interest based upon the concept selected by the user.

METHOD AND SYSTEM FOR CREATING A DOCUMENT INTEREST PROFILE

ABSTRACT OF THE DISCLOSURE

According to one embodiment of the present invention, methods and systems for displaying an interest profile for an electronically stored document are provided. Interest profiles provide features that can enhance the experience of reading or using the electronic document. In exemplary embodiments, methods and systems include one or more interest profile techniques, such as graphical presentations and the like, for browsing or searching documents are provided. The graphical presentation can provide information about content of a document. The invention can be embodied in computer systems that include user input devices, processors, displays, storage and the like.

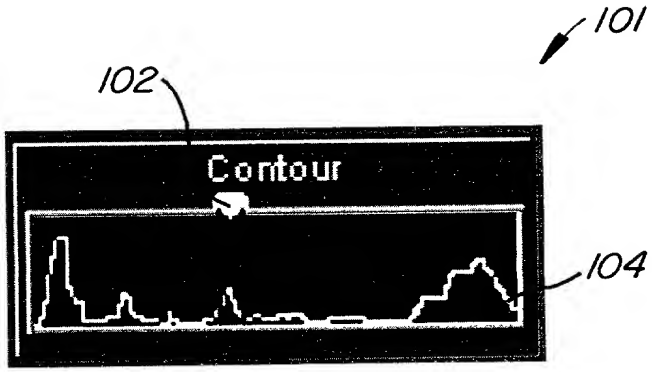

FIG. 1A.

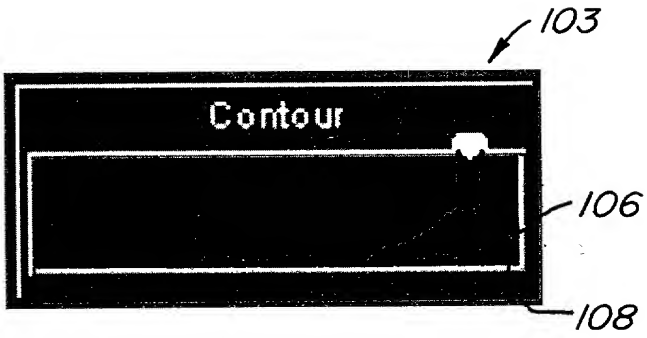

FIG. 1B.

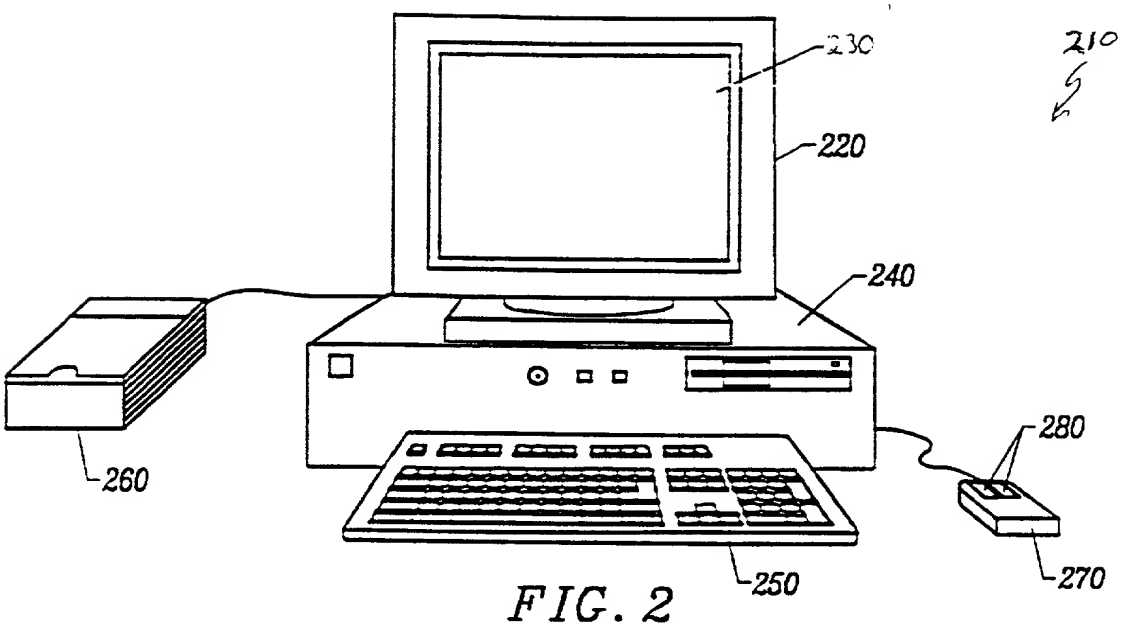
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FIG. 2

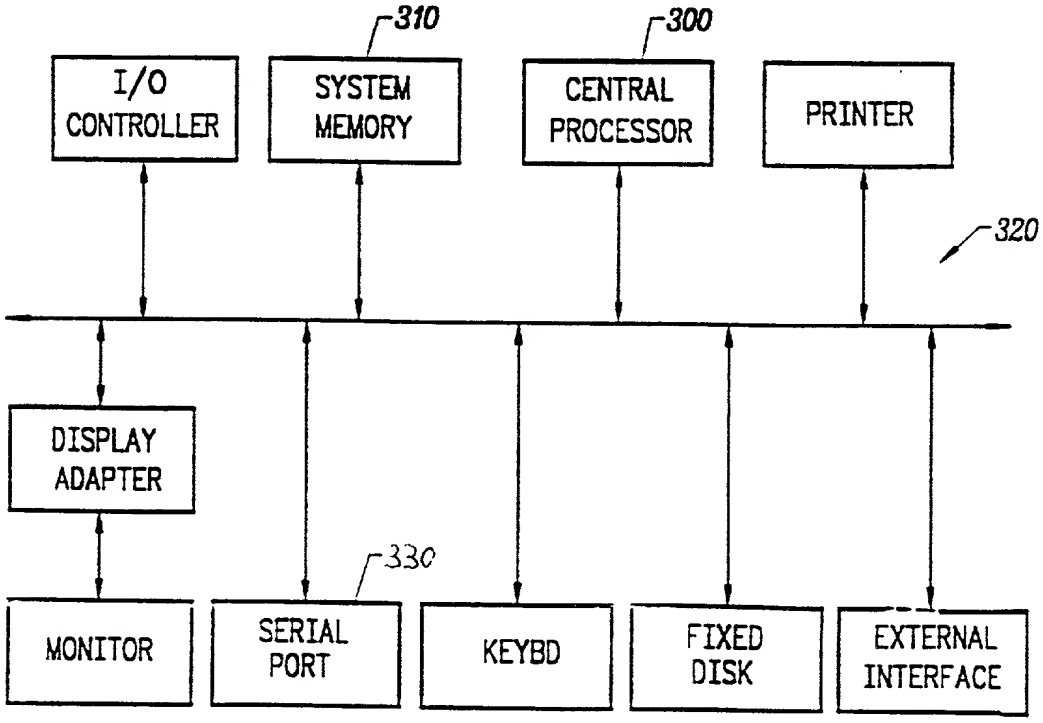
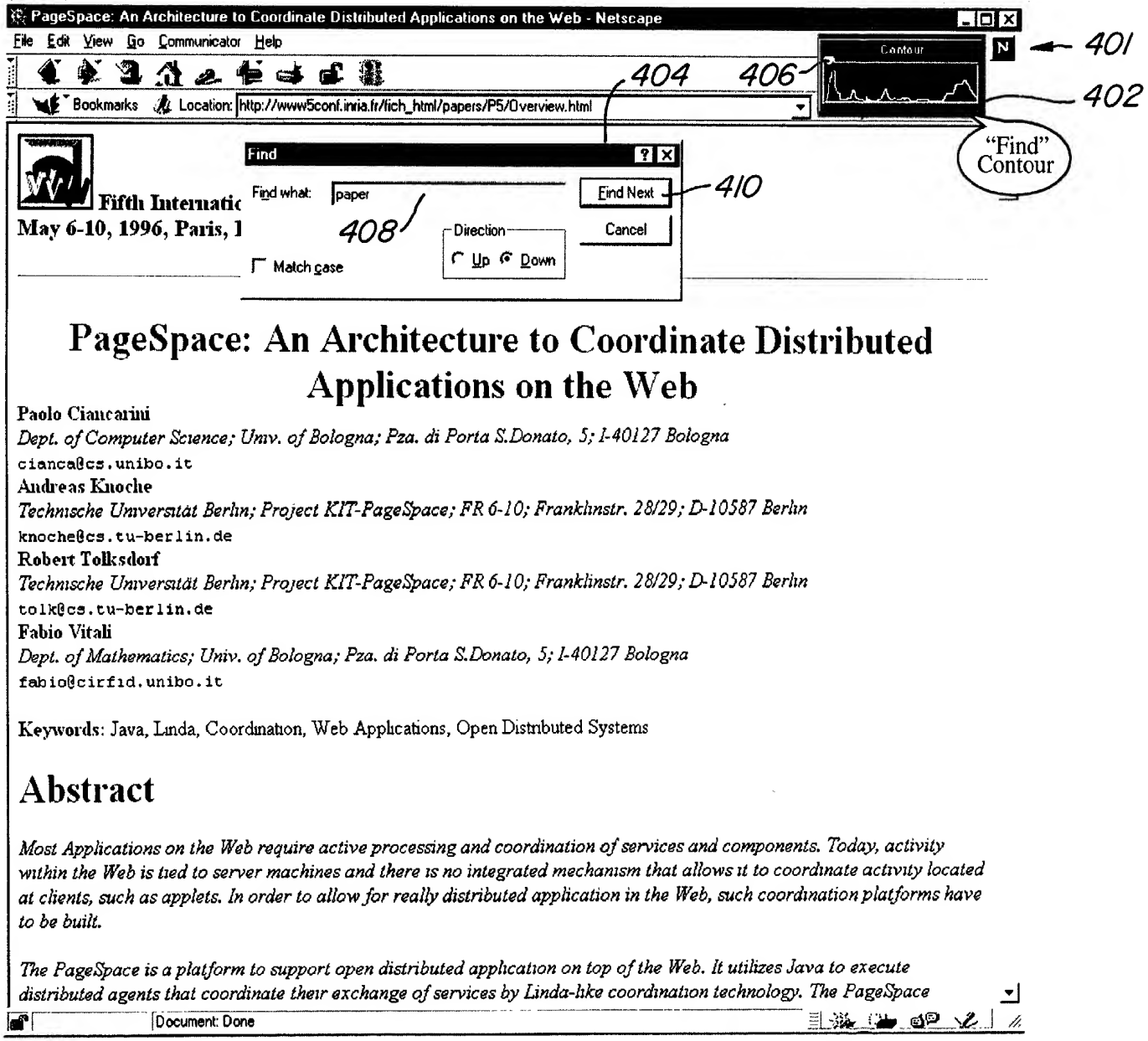

310
300
I/O CONTROLLER
SYSTEM MEMORY
CENTRAL PROCESSOR
PRINTER
320
DISPLAY ADAPTER
330
MONITOR
SERIAL PORT
KEYBD
FIXED DISK
EXTERNAL INTERFACE

FIG. 3


PageSpace: An Architecture to Coordinate Distributed Applications on the Web - Netscape
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Find what: paper
Find Next
Cancel
Direction
Up Down
Match case
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Fifth Internatic
May 6-10, 1996, Paris, 1
PageSpace: An Architecture to Coordinate Distributed Applications on the Web
Paolo Ciancarini
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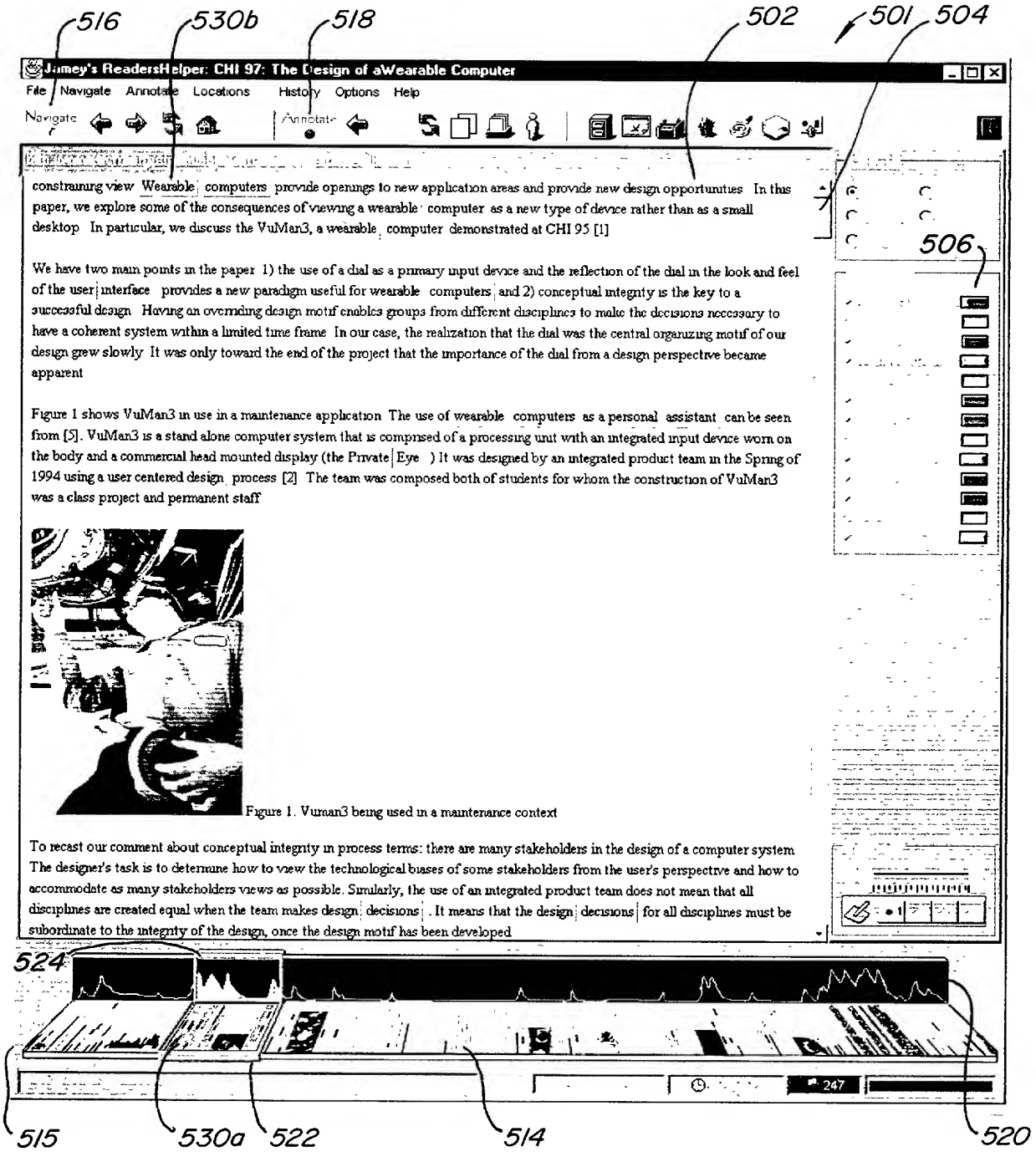
fabio@cirfid.unibo.it
Keywords: Java, Linda, Coordination, Web Applications, Open Distributed Systems
Abstract
Most Applications on the Web require active processing and coordination of services and components. Today, activity within the Web is tied to server machines and there is no integrated mechanism that allows it to coordinate activity located at clients, such as applets. In order to allow for really distributed application in the Web, such coordination platforms have to be built.
The PageSpace is a platform to support open distributed application on top of the Web. It utilizes Java to execute distributed agents that coordinate their exchange of services by Linda-like coordination technology. The PageSpace
Document: Done

FIG. 4.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Jamey's ReadersHelper: CHI 97: The Design of aWearable Computer
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constraining view Wearable computers provide openings to new application areas and provide new design opportunities In this paper, we explore some of the consequences of viewing a wearable computer as a new type of device rather than as a small desktop In particular, we discuss the VuMan3, a wearable computer demonstrated at CHI 95 [1]
We have two main points in the paper 1) the use of a dial as a primary input device and the reflection of the dial in the look and feel of the user interface provides a new paradigm useful for wearable computers and 2) conceptual integrity is the key to a successful design Having an overriding design motif enables groups from different disciplines to make the decisions necessary to have a coherent system within a limited time frame In our case, the realization that the dial was the central organizing motif of our design grew slowly It was only toward the end of the project that the importance of the dial from a design perspective became apparent
Figure 1 shows VuMan3 in use in a maintenance application The use of wearable computers as a personal assistant can be seen from [5]. VuMan3 is a stand alone computer system that is comprised of a processing unit with an integrated input device worn on the body and a commercial head mounted display (the Private Eye) It was designed by an integrated product team in the Spring of 1994 using a user centered design process [2] The team was composed both of students for whom the construction of VuMan3 was a class project and permanent staff
Figure 1. Vuman3 being used in a maintenance context
To recast our comment about conceptual integrity in process terms: there are many stakeholders in the design of a computer system The designer's task is to determine how to view the technological biases of some stakeholders from the user's perspective and how to accommodate as many stakeholders views as possible. Similarly, the use of an integrated product team does not mean that all disciplines are created equal when the team makes design decisions . It means that the design decisions for all disciplines must be subordinate to the integrity of the design, once the design motif has been developed
506
524
247
515
530a
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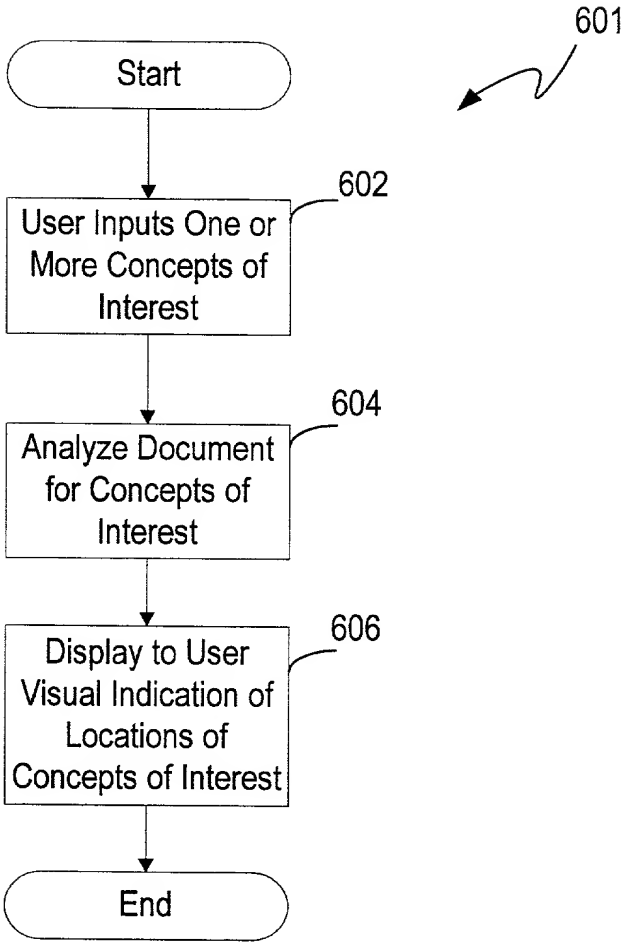
514
520

FIG. 5.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Start
602
User Inputs One or More Concepts of Interest
604
Analyze Document for Concepts of Interest
606
Display to User Visual Indication of Locations of Concepts of Interest
End

Fig. 6A

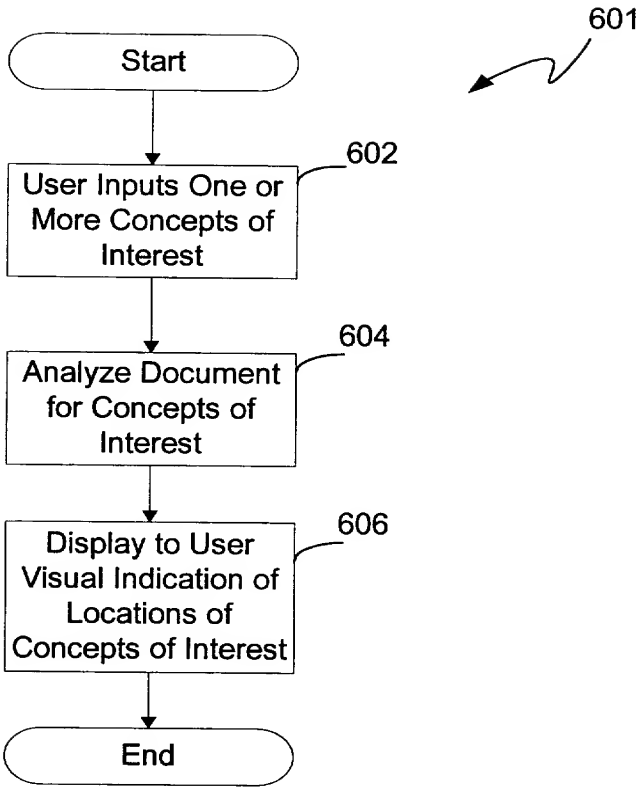

601
Start
602
User Inputs One or More Concepts of Interest
604
Analyze Document for Concepts of Interest
606
Display to User Visual Indication of Locations of Concepts of Interest
End

Fig. 6A

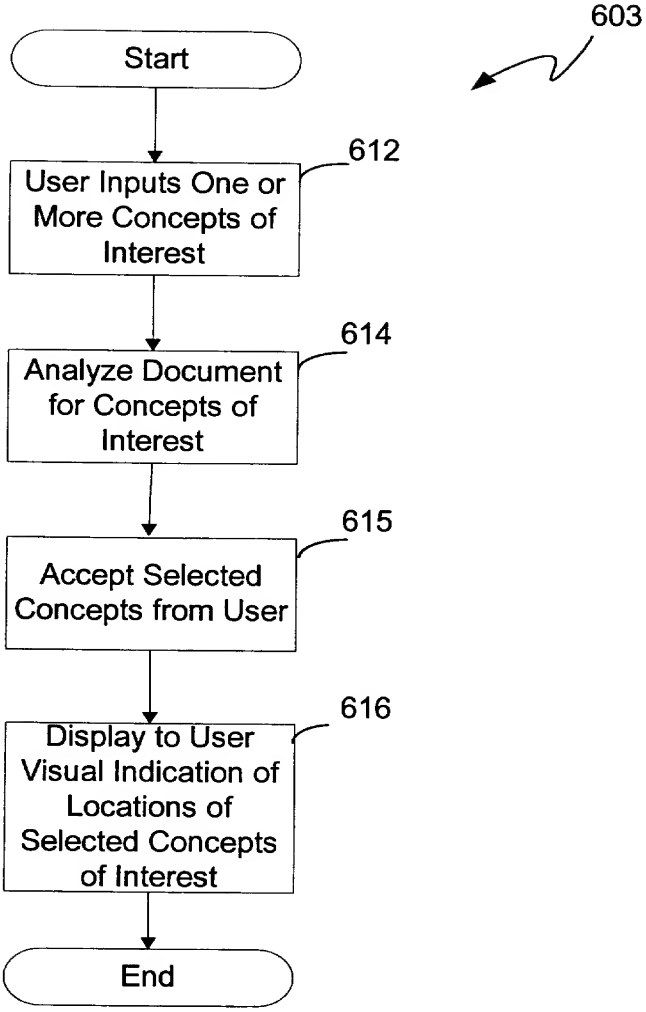
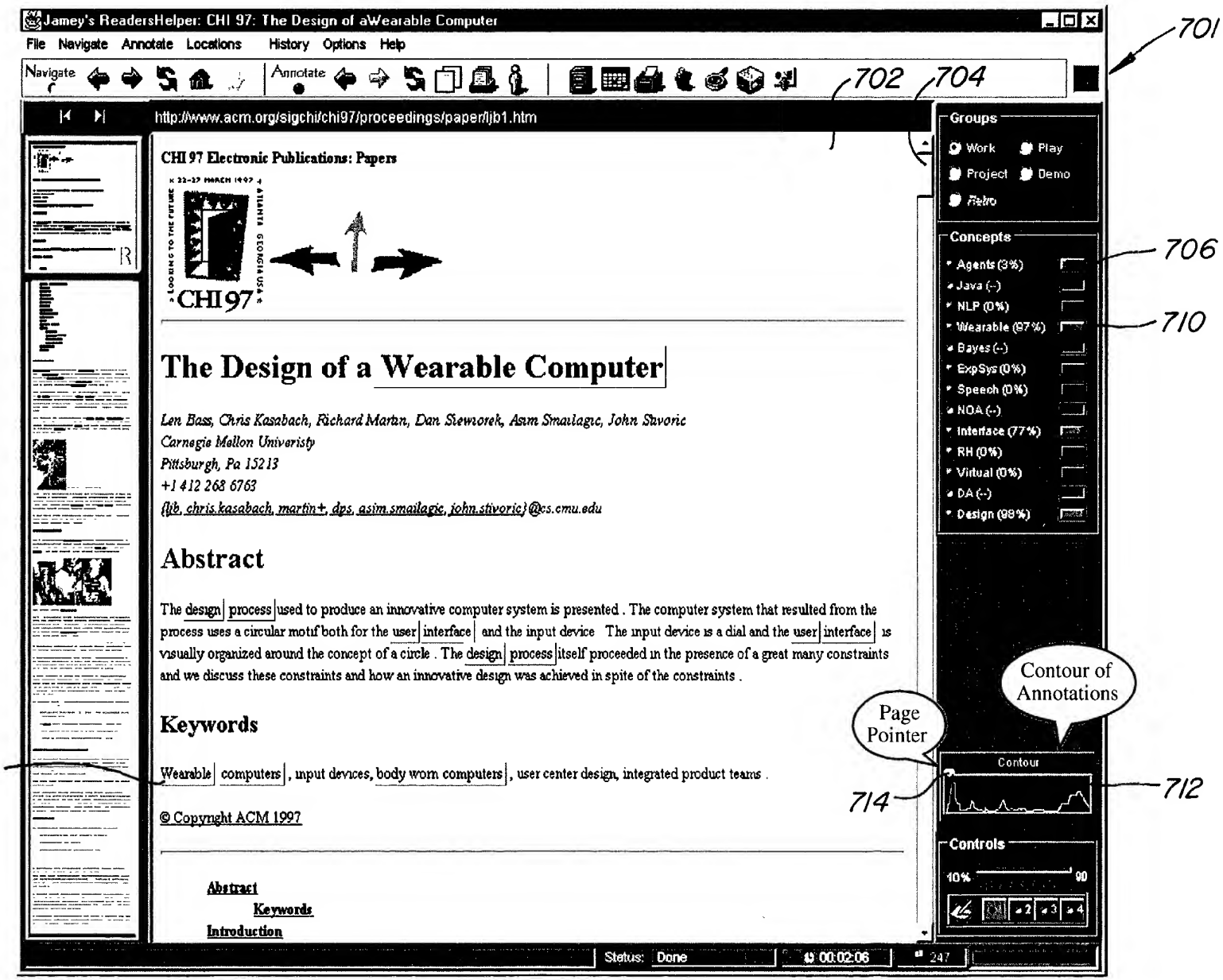


Fig. 6B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The Design of a Wearable Computer
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+1 412 268 6763
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Abstract
The design process used to produce an innovative computer system is presented . The computer system that resulted from the process uses a circular motif both for the user interface and the input device The input device is a dial and the user interface is visually organized around the concept of a circle . The design process itself proceeded in the presence of a great many constraints and we discuss these constraints and how an innovative design was achieved in spite of the constraints .
Keywords
Wearable computers, input devices, body worn computers, user center design, integrated product teams .
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Abstract
Keywords
Introduction
Groups
Work
Play
Project
Demo
Retro
Concepts
Agents (3%)
Java (--)
NLP (0%)
Wearable (97%)
Bayes (--)
ExpSys (0%)
Speech (0%)
NOA (--)
Interface (77%)
RH (0%)
Virtual (0%)
DA (--)
Design (98%)
Contour of Annotations
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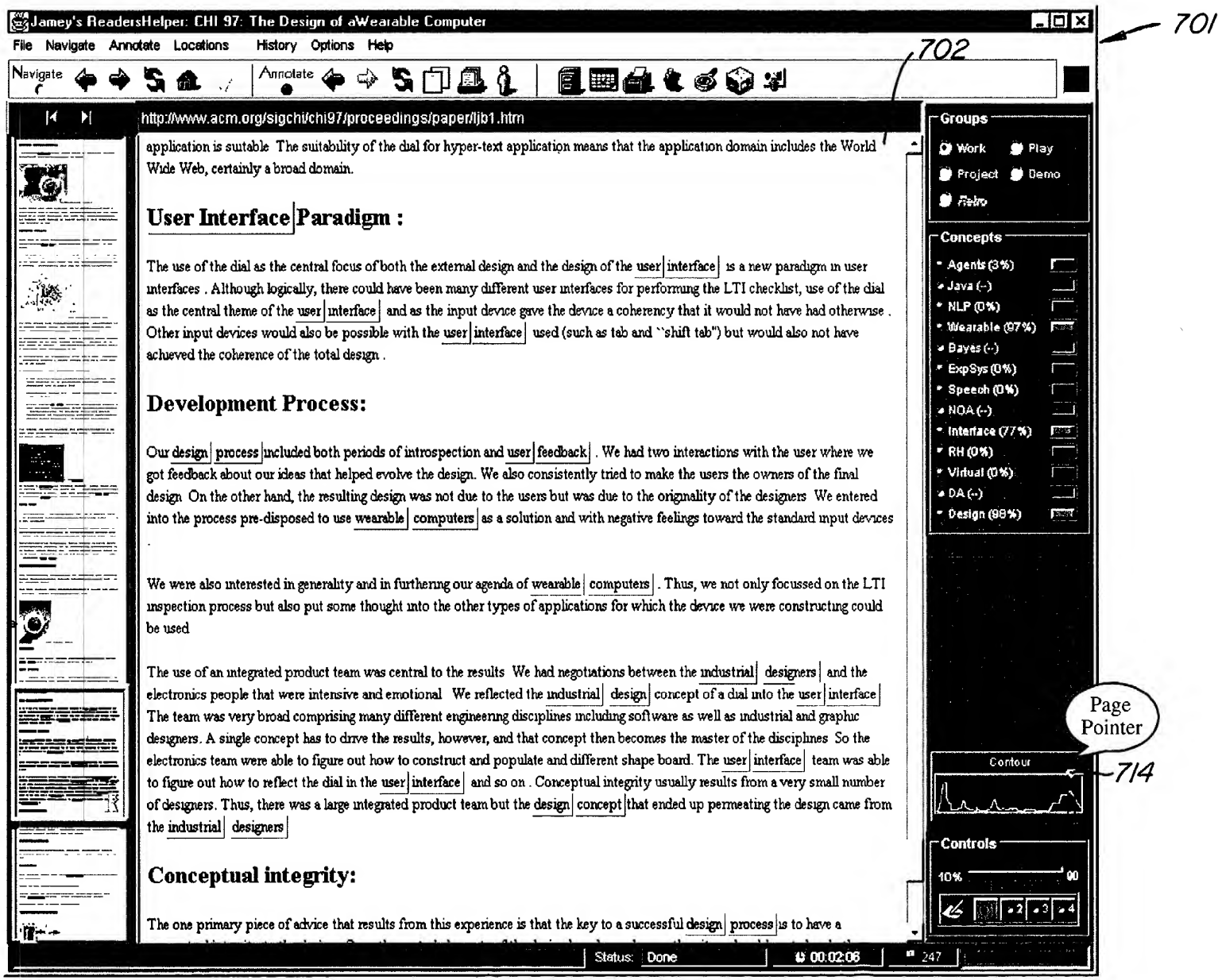
FIG. 7A.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http://www.acm.org/sigchi/chi97/proceedings/paper/ljb1.htm
application is suitable The suitability of the dial for hyper-text application means that the application domain includes the World Wide Web, certainly a broad domain.
User Interface Paradigm :
The use of the dial as the central focus of both the external design and the design of the user interface is a new paradigm in user interfaces . Although logically, there could have been many different user interfaces for performing the LTI checklist, use of the dial as the central theme of the user interface and as the input device gave the device a coherency that it would not have had otherwise . Other input devices would also be possible with the user interface used (such as tab and "shift tab") but would also not have achieved the coherence of the total design .
Development Process:
Our design process included both periods of introspection and user feedback . We had two interactions with the user where we got feedback about our ideas that helped evolve the design. We also consistently tried to make the users the owners of the final design On the other hand, the resulting design was not due to the users but was due to the originality of the designers We entered into the process pre-disposed to use wearable computers as a solution and with negative feelings toward the standard input devices .
We were also interested in generality and in furthering our agenda of wearable computers . Thus, we not only focussed on the LTI inspection process but also put some thought into the other types of applications for which the device we were constructing could be used
The use of an integrated product team was central to the results We had negotiations between the industrial designers and the electronics people that were intensive and emotional We reflected the industrial design concept of a dial into the user interface The team was very broad comprising many different engineering disciplines including software as well as industrial and graphic designers. A single concept has to drive the results, however, and that concept then becomes the master of the disciplines So the electronics team were able to figure out how to construct and populate and different shape board. The user interface team was able to figure out how to reflect the dial in the user interface and so on . Conceptual integrity usually results from a very small number of designers. Thus, there was a large integrated product team but the design concept that ended up permeating the design came from the industrial designers
Conceptual integrity:
The one primary piece of advice that results from this experience is that the key to a successful design process is to have a
Groups
Work
Play
Project
Demo
Retro
Concepts
Agents (3%)
Java (--)
NLP (0%)
Wearable (97%)
Bayes (--)
ExpSys (0%)
Speech (0%)
NOA (--)
Interface (77%)
RH (0%)
Virtual (0%)
DA (--)
Design (88%)
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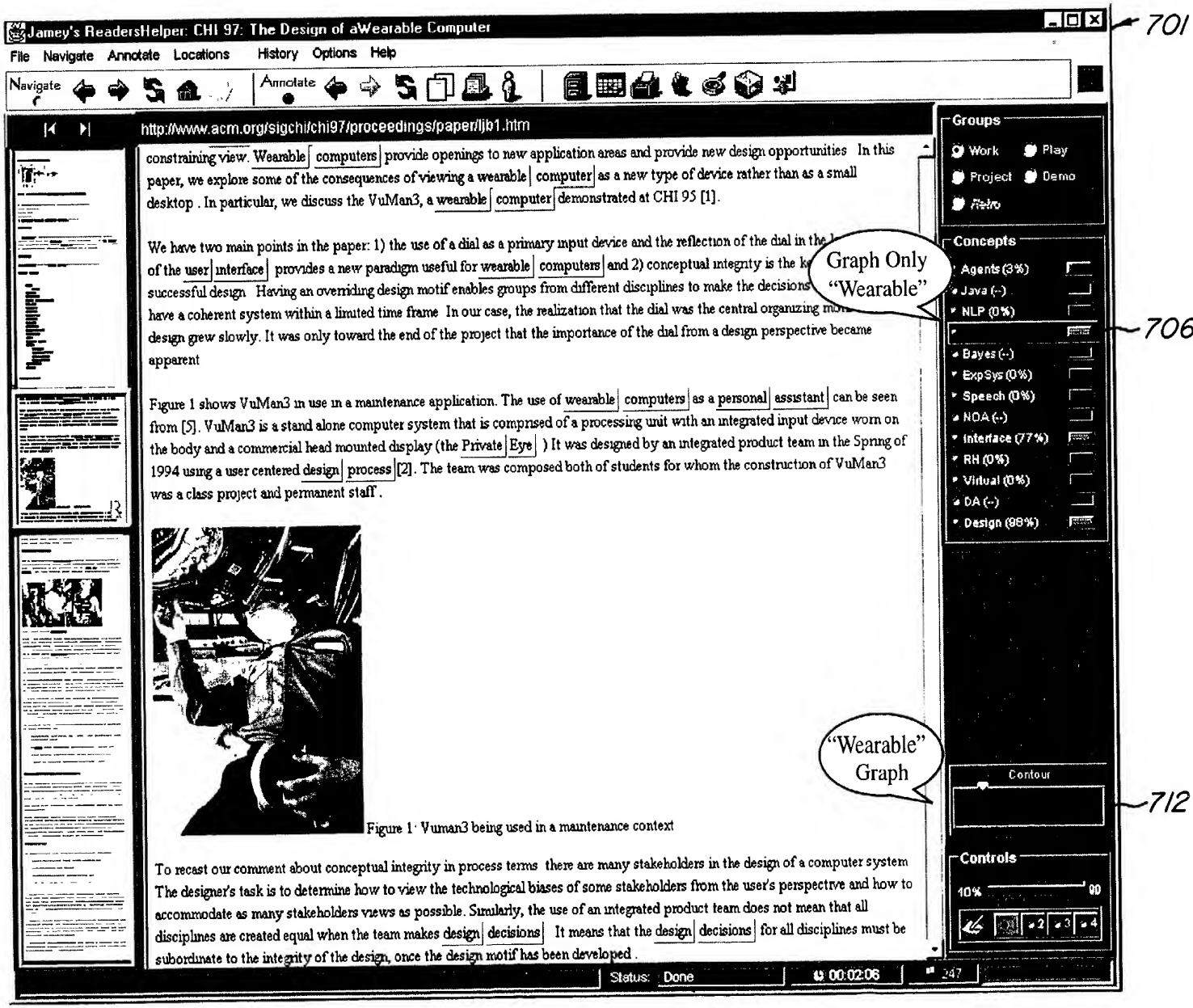
FIG. 7B.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http://www.acm.org/sigchi/chi97/proceedings/paper/ljb1.htm
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We have two main points in the paper: 1) the use of a dial as a primary input device and the reflection of the dial in the
of the user interface provides a new paradigm useful for wearable computers and 2) conceptual integrity is the k
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Groups
Work
Play
Project
Demo
Concepts
Agents (3%)
Java (--)
NLP (0%)
Bayes (--)
ExpSys (0%)
Speech (0%)
NOA (--)
Interface (77%)
RH (0%)
Virtual (0%)
DA (--)
Design (98%)
Graph Only "Wearable"
"Wearable" Graph
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Status: Done
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FIG. 7C.

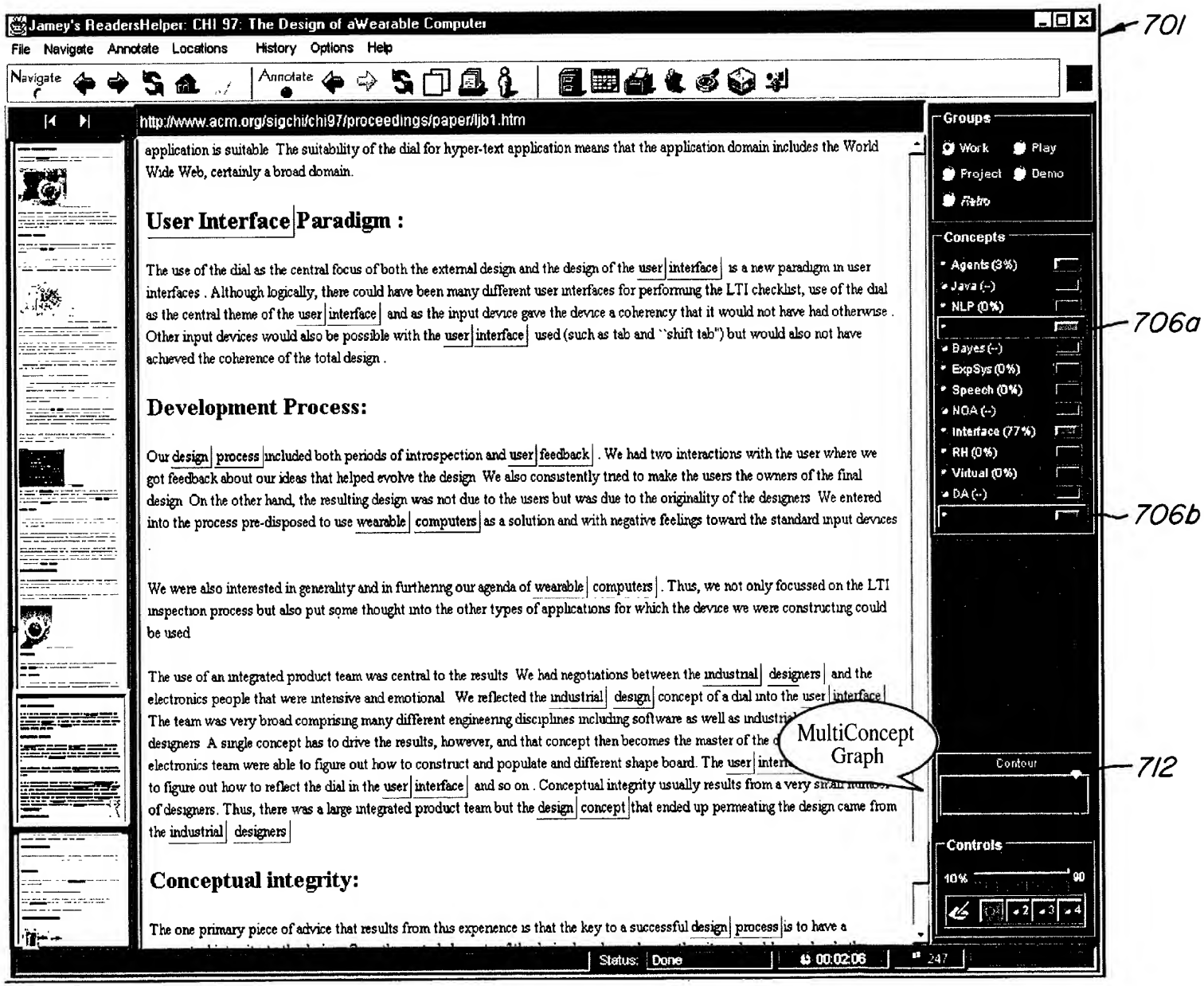

FIG. 7D.

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I declare that:

My residence, post office address and citizenship are as stated below next to my name; I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: **METHOD AND SYSTEM FOR CREATING A DOCUMENT INTEREST PROFILE** the specification of which _X_ is attached hereto or ____ was filed on _____ as Application No. _____ and was amended on _____ (if applicable).

I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above. I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56. I claim foreign priority benefits under Title 35, United States Code, Section 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)

Country	Application No.	Date of Filing	Priority Claimed Under 35 USC 119

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below:

Application No.	Filing Date

I claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Application No.	Date of Filing	Status

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

Paul A. Durdik, Reg. No. 37,819
Robert C. Colwell, Reg. No. 27,431

Send Correspondence to:	Direct Telephone Calls to: (Name, Reg. No., Telephone No.)
Paul A. Durdik **TOWNSEND and TOWNSEND and CREW LLP** **Two Embarcadero Center, 8th Floor** **San Francisco, California 94111-3834**	Name: Paul A. Durdik Reg. No.: 37,819 Telephone: 650-326-2400

Full Name of Inventor	Last Name: **GRAHAM**	First Name: **JAMEY**	Middle Name or Initial:	
Residence & Citizenship:	City: **Los Altos**	State/Foreign Country: **California**	Country of Citizenship: **USA**	
Post Office Address:	Post Office Address: **136 Sylvian Way**	City: **Los Altos**	State/Country: **California**	Postal Code: **94022**

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signature of Inventor

JAMEY GRAHAM

Date 6/21/99

PA 193536 v1